In the specification

Please amend page 6, line 16 to page 7, line 11 as follows:

"In a first exemplary embodiment of the invention illustrated in figure 4, there is a one to one static reference provided between the protocol identifier and the minichannel address. The 8 bit AAL2 address space provided within the CID (channel identifier) field of the packet header can be increased, on an as-needed basis, by using the first octet of the packet payload. The extension of the address space in this way is possible since in this instance the PPP is designed to operate over a point-to-point link and thus there is no switching at the AAL2 layer, only in the ATM layer. The PPP overhead is minimised by only sending the additional octet when needed (i.e. for the infrequently used protocol identifiers in the range 0x0200 to 0xffff). Thus in this embodiment, we adopt a similar paradigm to the compressed address option available within PPP. To achieve this the least-significant octet of the protocol identifier is transmitted in the CID field of the packet header, and when necessary the most-significant octet is transported in the first octet of the packet payload. The LSB of the least-significant octet is used to indicate the presence or absence of the most-significant octet. A zero indicates no following most-significant octet; a one indicates a following most-significant octet. Thus for IP the user datagram (IP NLP = 0x~~02~~10021) would be indicated via the CID value of 0x20, whilst its control channel (ILCP NCP = 0x8021) would be indicated via a CID field of 0x21 followed by a first octet packet payload of 0x80, and the Link Control Protocol (LCP = 0xc021) would be indicated via a CID field of 0x21 followed by a first octet packet payload of 0xc0. There is no loss in generality in this approach of using the LSB of the CID field to indicate a further octet of addressing information since the PPP specification states that all protocol identifiers must be odd (to enable the optional compression to one byte) - thus this bit is not used as part of the PPP protocol address."

Please amend page 8, lines 6 to 18 as follows:

"In a further embodiment of the invention, use is made of the AAL2 negotiation procedures (ANP ITU Q.2630.1) to establish and manage PPP sessions. In this embodiment, an AAL2 VC is set-up in the normal manner via management or signalling. On initialisation, the VC will contain a single minichannel as normal- the ANP channel. To establish a PPP session the requesting entity initiates ANP to establish an LCP channel. The ANP negotiates the establishment of a minichannel in the normal manner. The LCP channel can then establish and configure the PPP session in the normal manner. Once established, the individual NLP/NCP channels are established in a similar manner to the second embodiment described above - with the exception that ~~the~~ ANP is used to set-up and tear down the individual minichannels. The NCP can use ~~AMD~~ ANP when for example establishing cut-through sessions."

Please amend page 9, lines 3 to 11 as follows:

"Figure 5 illustrates the segmentation of long datagrams over a number of minicells. The PPP information together with the protocol identifier is mapped into the payload of a datagram which is provided with a trailer comprising UUI, CPI, LI and CRC fields or as specified by the AAL5 and/or the I.366.1 standards. The datagram payload is then segmented into ~~63~~ 64 (or optionally 63) byte portions which are mapped into the minicell payload, this being provided with a header comprising CID, LI, UUI, CRC ~~and multiplex MID~~ (and optional multiplex MID) fields. The LSB of the UUI field provides an indicator of the continuation/end of a segmented datagram."

Please amend page 9, lines 12 to 27 as follows:

"A further extension to this embodiment can be achieved by extending the SSCS function that performs the SAR to include the ability to multiplex at the SSCS layer. In this way, multiple sources can be multiplexed into a single AAL2 minichannel. This enables a choice to be made as to how the individual PPP channels are encapsulated into AAL2 (via multiplexing at the SSCS or CPS layer). Thus a full PPP session could be encapsulated into a single AAL2 minichannel enabling the number of simultaneous PPP sessions within a single VC to be maximised, or a separate minichannel could be used to encapsulate a single protocol of the PPP session only. Typically one might wish to allocate an AAL2 channel to each level of priority within the PPP session. - Thus all delay sensitive channels might be encapsulated into a single CID and all delay insensitive channels into a further CID. The ability of AAL2 to prioritise minichannels can then be used to ensure the delay sensitive services are subjected to minimum delay. The extended ~~PPP2~~ PPP stack for these embodiments is shown schematically in figure 6."

A4

Please amend page 9, line 29 to page 10, line 4 as follows:

"As discussed above, the AAL2 minichannels form an asynchronous self-delineating stream that is carried within ATM payloads. Thus the ATM cells essentially perform a transport function only. Therefore AAL2 minichannels can be carried directly over any regular transport structure (for example MPEG-2 TS frames or TDMA time slots) without the need to carry ATM. Thus, by using our arrangement, the use of ~~PPP2~~ PPP can be extended to cover any regular transport structure used in the access network. A relay point at the interface to the ATM core network can be used to readapt the minichannels into and out of ATM cells."

A5

Please amend page 11, lines 11 to 21 as follows:

"Figure 8 together with its associated logic diagram (figure 8a) illustrates in schematic form a single PPP session directly encapsulated into an AAL2 VCC (virtual channel connection). In the simplest case, the whole of the AAL2 is dedicated to transporting the PPP session in one CID only. In this arrangement, one CID per ~~PPP2~~ PPP session is established by the AAL2 negotiating procedure (ANP) at call set up. A protocol identifier (PID) may be provided in every payload to differentiate between protocols, but this of course does not extend to the support of multiple IP sessions per ~~PPP2~~ PPP session unless sequenced by higher layers. Alternatively, the PID can be provided in the first segment whereby the AAL2 SSCS SAR ensures sequencing, i.e. a non-parallel implementation."

Please amend page 11, lines 22 to 29 as follows:

"The arrangement of figure 8 reduces the number of ATM voice VCs required, especially when combined with AAL2 access carrying other real time media over AAL5. It further allows common routing of media and can still provide different QoS over AAL5, as voice traffic can take priority over ~~PPP2~~ PPP. Multiple ~~PPP2~~ PPP sessions are possible in the same VC. Thus, a single PC or user terminal can function as a router for a source IP network, or an application such as H.323 can have media going to different end points."

Please amend page 12, lines 4 to 14 as follows:

"In another embodiment illustrated schematically in figure 9 together with the associated logic diagram of figure 9a, an entire VCC can be allocated to the transport of a PPP session in which each protocol can be treated in a different manner, e.g. offering a higher QoS (quality of service) for delay sensitive services, the use of CRCs (cyclic redundancy codes) for data traffic, and SNs for voice traffic.

Additionally, the ANP can be used to establish minicells for the PPP protocols or sessions on demand. Thus, it is possible to support both the PPP session containing multiple ~~CIDs~~ PIDs and additional traffic within the same VCC. Multiple PPP sessions can be supported in a single AAL2 VCC where multiple CIDs are allocated to each session. Similarly, the VC can also support non-PPP traffic."

Please amend page 12, lines 15 to 26 as follows:

"In the embodiment of figure 9, one CID per protocol can be established, in the dynamic case, under direction from the ANP, or, in the static case, without the ANP and by mapping the PID to the CID. The dynamic case can extend to IP sessions within a given ~~PPP2~~ PPP session and protocol by using NCP (network control program) to control the ANP and then providing a cut-through similar to multi-protocol over ATM (MPOA). If there are multiple IP sessions in the protocol, an MID (multiplexing identifier) is required where there is no cut-through and can be used to suppress the header. The arrangement allows different QoS control of different protocols, or different IP sessions in cut-through applications. All protocols can terminate at the same ATM end points, or an AAL2 relay with a ~~PPP2~~ PPP stack can be deployed to extend to virtual end points."

Please amend page 12, line 27 to page 13, line 2 as follows:

"In the embodiment shown in figure 10 and its associated logic diagram figure 10a, there is one CID per ~~PPP2~~ PPP protocol session, e.g. as described above with reference to figure 8, but applied to the IP connections for the purpose of cut-through. The NCP uses the ANP to establish the cut-through route. The MID is not required. As shown in figure 10, the AAL2 relay uses LCP (Link Control Protocol) to

A10 cont

perform authentication for each possible end point. The adapter/router performs cut-through and suppresses the IP header on connection oriented sessions."

Please amend page 13, lines 16 to 22 as follows:

A11

"In figure 11, the CID is established by ~~the~~ ANP for single or multiple LCP with a multiplex indicator to identify the session and to perform authentication and control. This is also of advantage in mobile applications where a base station may need to isolate data from several mobiles to ensure that voice is given a higher QoS than the collective data. The MID can be used to distinguish the ~~PPP2~~ PPP session ID, the PID and IP session as a multiplex of datagrams."

Please amend page 13, lines 23 to 29 as follows:

A12

"In the modification indicated in Fig 12 and in the associated logic diagram of figure 11b, a CID is provided per set of IP sessions from multiple ~~PPP2~~ PPP sessions. This permits a cut-through route to be established for similarly routed IP sessions. The MID is required to distinguish the sessions and this allows suppression of the IP header. The AAL2 network then becomes a virtual routing network. Multiple H.323 sessions are possible and efficient routes can be created to ISP networks."

Please amend page 13, line 30 to page 14, line 10 as follows:

A13 cont

"Referring now to figure 13, this shows an arrangement for transporting encapsulated PPP traffic over an asynchronous link and for trunking voice calls such that the multiple voice channels form a trunk group carried over a single point to point protocol (PPP) ATM trunk. In this arrangement, PPP sessions can be set up

between work stations 61 via Ethernet switches 62, network adapters 63 and an ATM transport network 64. H323 gatekeepers 65 are coupled one to each Ethernet switch 62, and each network adapter is coupled to an ISDN call handler 66. The figure illustrates the establishment of a ~~PPP2~~ PPP session between two work stations 61a and 61b. In this arrangement, PPP is the IETF (Internet Engineering Task Force) protocol that is adapted to utilise an AAL2 VC. ~~PPP2~~ PPP eliminates IP headers and compresses the RTP/UDP (real time protocol/user data protocol) typically to three bytes."

Please amend page 14, line 23 to page 15, line 2 as follows:

"Figure 14 illustrates a full H.323 application with multiple media. H.323 terminals 141 using H.225 call signalling may be coupled via an Ethernet 142 and an adapter/router 143 to an ATM network 144 performing an AAL2 relay function to carry a ~~PPP2~~ PPP session to a further Ethernet 142a or to a PSTN 148. A gatekeeper 145 retains a dialling plan and address resolution. A call handler 146 associated with the adapter/router 143 is arranged to set up a VC, e.g. via the Q2931 protocol. Alternatively the call handler can use the ANP to set up a ~~PPP2~~ PPP session to each end point from an address provided by the gatekeeper. The LCP and IP NCP establish IP networking. The call handler can also function as an H.245 signal router to negotiate IP media sessions and router ascribed ~~PPP2~~ PPP sessions to the correct end point based on the IP address."